

4. GENERAL PROTECTION/COLLECTION STRATEGIES

4.1. Chapter Overview

This chapter details the specific response strategies and resources to protect as outlined by the participants of the GRP workshop for the San Juan Island and North Puget Sound areas. It describes the strategies determined for each area and the prioritization of those strategies. Note that GRPs only address protection of sensitive **public** resources. It is the responsibility of private resource owners and/or potentially liable parties to address protection of private resources (such as commercial marinas, private water intakes, and non-release aquaculture facilities).

Maps & Matrices

The maps in this chapter provide information on the specific location of booming strategies. They are designed to help the responder visualize response strategies. Details of each booming strategy are listed in corresponding matrix tables. Each matrix indicates the exact location, intent and implementation of the strategy indicated on the map. The "Status" column describes whether the strategy has been visited or tested in the field, and the date of the visit/test. Most strategies include a number for the corresponding shoreline photo, which is available on the Washington Department of Ecology's internet site at <http://www.ecy.wa.gov/apps/shorephotos/>.

Major Protection Techniques

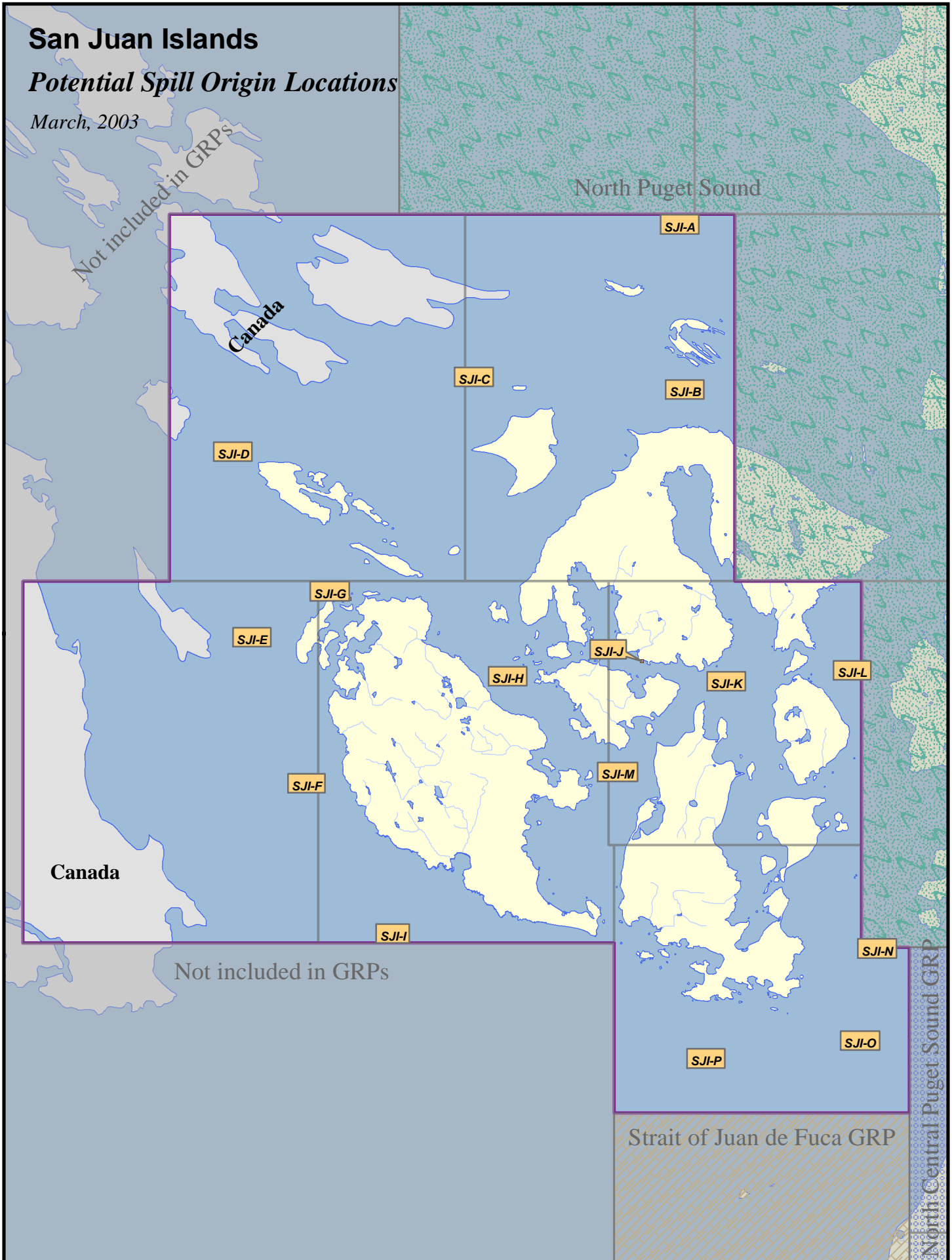
All response strategies fall into one of three major techniques that may be utilized either individually or in combination. The strategies listed in Section 4.2 are based on the following techniques, and are explained in detail in Section 4.3.

Dispersants: Washington State Policy currently does not allow use of dispersants in this area. Certain chemicals break up slicks on the water. Dispersants can decrease the severity of a spill by speeding the dissipation of certain oil types. Their use will require approval of the Unified Command. Dispersants will only be used in offshore situations under certain conditions, until further determinations are made by the Area Committee and published in the Area Contingency Plan.

In Situ Burning: Approval to burn in this area is unlikely due to the proximity of population to a potential burn site. Burning requires the authorization of the Unified Command, who determine conformance of a request to burn with the guidelines set forth in the Area Plan. This option is preferable to allowing a slick to reach the shore provided that population areas are not exposed to excessive smoke. Under the right atmospheric conditions, a burn can be safely conducted in relative close proximity to human population. This method works on many types of oil, and requires special equipment including a fire boom and igniters.

Mechanical Recovery and Protection Strategies: If a spill is too close to shore to use In Situ burning or dispersants, the key strategies are skimming and use of collection, diversion, or exclusion booming to contain and recover the oil, and prevent it from entering areas with sensitive wildlife and fisheries resources. These options are described in detail in Appendix A. Specific skimming strategies are not listed in the maps and matrices, but skimming should be used whenever possible and is often the primary means of recovering oil and protecting resources, especially when booming is not possible or feasible.

Priorities: The strategy priority tables (Section 4.2.) were developed using specific locations where spills are likely to occur. Trajectory modeling was used for each of these "Potential Spill Origins" to identify sensitive resources that would likely be impacted within the initial hours of the spill. A booming strategy priority table was developed for each of the "Potential Spill Origins" based on the sensitivity of resources, feasibility, etc. **Booming strategies should be deployed following the priority table for the "Potential Spill Origin" closest to the actual spill origin.** The map on page 4-2 shows the locations of all Potential Spill Origins for the San Juan Islands and the map on page 4-45 shows the locations for North Puget Sound. The booming strategies indicated in the priority tables are explained in detail in the Maps & Matrices section (Section 4.3.). It is implied that control and containment at the source is the number one priority of any response. If in the responder's best judgment this is not feasible, then the priorities laid out in the priority tables take precedence over containment and control.



4.2.2.1 San Juan Islands Booming Strategy Priority Tables

Table 4-1-1

Potential Spill Origin: SJI-A - North of Sucia Island			
BOOMING PRIORITY	STRATEGY NUMBER	MAP PAGE NUMBER	COMMENTS
1	SUC-1	4-15	
2	SUC-2	4-15	
3	SUC-3a	4-15	
4	SUC-3b	4-15	
5	SUC-4	4-15	
6	SUC-5	4-15	
7	WAL-6	4-15	

Table 4-1-2

Potential Spill Origin: SJI-B - South of Sucia Island			
BOOMING PRIORITY	STRATEGY NUMBER	MAP PAGE NUMBER	COMMENTS
1	SUC-1	4-15	
2	SUC-2	4-15	
3	SUC-3a	4-15	
4	SUC-3b	4-15	
5	SUC-4	4-15	
6	SUC-5	4-15	
7	WAL-6	4-15	

Table 4-1-3

Potential Spill Origin: SJI-C - Stuart Island, NW of Waldron Island			
BOOMING PRIORITY	STRATEGY NUMBER	MAP PAGE NUMBER	COMMENTS
1	STU-7	4-16	
2	STU-8	4-16	
3	STU-9a	4-16	
4	STU-9b	4-16	
5	WAL-6	4-15	
6	SUC-4	4-15	
7	SUC-5	4-15	
8	SUC-3a	4-15	
9	SUC-3b	4-15	
10	SUC-2	4-15	
11	SUC-1	4-15	
12	JON-24	4-18	
13	JON-25	4-18	

Table 4-1-4

Potential Spill Origin: SJI-D - Northwest corner of Stuart Island			
BOOMING PRIORITY	STRATEGY NUMBER	MAP PAGE NUMBER	COMMENTS
1	STU-7	4-16	
2	STU-8	4-16	
3	STU-9a	4-16	
4	STU-9b	4-16	
5	HEN-23	4-18	
6	SJI-10	4-18	
7	SJI-17	4-18	
8	SJI-18	4-18	
9	SJI-22	4-18	
10	SJI-20	4-18	
11	SJI-21	4-18	
12	SJI-15	4-18	
13	SJI-16	4-18	

Table 4-1-5

Potential Spill Origin: SJI-E - Between Sidney and Henry Islands			
BOOMING PRIORITY	STRATEGY NUMBER	MAP PAGE NUMBER	COMMENTS
1	STU-9a	4-16	
2	STU-9b	4-16	
3	SJI-17	4-18	
4	SJI-18	4-18	
5	SJI-16	4-18	
6	SJI-15	4-18	
7	SJI-20	4-18	
8	SJI-21	4-18	
9	HEN-23	4-18	
10	SJI-22	4-18	
11	STU-7	4-16	
12	STU-8	4-16	

Table 4-1-6

Potential Spill Origin: SJI-F - Deadman Bay, West shore of San Juan Island			
BOOMING PRIORITY	STRATEGY NUMBER	MAP PAGE NUMBER	COMMENTS
1	SJI-17	4-18	
2	SJI-18	4-18	
3	SJI-16	4-18	
4	SJI-15	4-18	

Table 4-1-7

Potential Spill Origin: SJI-G - North of Roche Harbor			
BOOMING PRIORITY	STRATEGY NUMBER	MAP PAGE NUMBER	COMMENTS
1	HEN-23	4-18	
2	SJI-22	4-18	
3	SJI-20	4-18	
4	SJI-21	4-18	
5	SJI-10	4-18	
6	STU-9a	4-16	
7	STU-9b	4-16	
8	SJI-17	4-18	
9	SJI-18	4-18	
10	SJI-16	4-18	
11	SJI-15	4-18	

Table 4-1-8

Potential Spill Origin: SJI-H - Wasp Islands, west end of Shaw Island			
BOOMING PRIORITY	STRATEGY NUMBER	MAP PAGE NUMBER	COMMENTS
1	SHA-33	4-18	
2	SJI-11	4-18	
3	SJI-12	4-18	
4	SJI-13	4-18	
5	JON-24	4-18	
6	JON-25	4-18	
7	ORC-26	4-18	
8	ORC-27	4-18	
9	LOP-47	4-19	
10	LOP-48a	4-19	
11	LOP-48b	4-19	
12	LOP-49	4-19	
13	LOP-50	4-19	
14	LOP-51	4-19	
If oil is moving south through San Juan Channel then:			
15	LOP-46	4-20	
16	SJI-14	4-18	
If oil is moving north through Upright Channel then:			
15	SHA-30	4-19	
16	SHA-31	4-19	
17	SHA-32	4-19	

Table 4-1-9

Potential Spill Origin: SJI-I - Middle Bank, Inner Strait of Juan De Fuca, South of San Juan Island			
BOOMING PRIORITY	STRATEGY NUMBER	MAP PAGE NUMBER	COMMENTS
1	SJI-15	4-18	

Table 4-1-10

Potential Spill Origin: SJI-J - Orcas Island Ferry Terminal			
BOOMING PRIORITY	STRATEGY NUMBER	MAP PAGE NUMBER	COMMENTS
1	SHA-29a	4-19	
2	SHA-29b	4-19	
3	SHA-30	4-19	
4	SHA-31	4-19	
5	SHA-32	4-19	
6	SHA-33	4-18	
7	LOP-47	4-19	
8	ORC-26	4-18	
9	ORC-27	4-18	
10	JON-24	4-18	
11	JON-25	4-18	
12	LOP-34	4-19	

Table 4-1-11

Potential Spill Origin: SJI-K - Upright Head, North end of Lopez Island			
BOOMING PRIORITY	STRATEGY NUMBER	MAP PAGE NUMBER	COMMENTS
1	ORC-28	4-19	
2	SHA-30	4-19	
3	SHA-31	4-19	
4	SHA-32	4-19	
5	LOP-47	4-19	
6	LOP-48a	4-19	
7	LOP-48b	4-19	
8	LOP-49	4-19	
9	LOP-50	4-19	
10	LOP-51	4-19	
11	LOP-34	4-19	
12	LOP-35	4-19	
13	LOP-36	4-19	
14	SHA-33	4-18	
15	JAM-53	4-19	
16	JAM-54	4-19	

Table 4-1-12

Potential Spill Origin: SJI-L - Obstruction Island			
BOOMING PRIORITY	STRATEGY NUMBER	MAP PAGE NUMBER	COMMENTS
1	JAM-54	4-19	
2	JAM-53	4-19	
3	LOP-41	4-20	
4	ORC-28	4-19	
5	NPS-72	4-59	Refer to North Puget Sound GRP for NPS strategies
6	NPS-73	4-59	
7	SHA-30	4-19	
8	SHA-31	4-19	
9	SHA-32	4-19	
10	LOP-34	4-19	
11	LOP-35	4-19	
12	LOP-36	4-19	

Table 4-1-13

Potential Spill Origin: SJI-M - Shaw Island, south end			
BOOMING PRIORITY	STRATEGY NUMBER	MAP PAGE NUMBER	COMMENTS
1	LOP-47	4-19	
2	LOP-48a	4-19	
3	LOP-48b	4-19	
4	LOP-49	4-19	
5	LOP-50	4-19	
6	LOP-51	4-19	
7	LOP-52	4-19	
8	SHA-30	4-19	
9	SHA-31	4-19	
10	SHA-32	4-19	
11	SHA-33	4-18	
12	JON-24	4-18	
13	JON-25	4-18	
14	SJI-11	4-18	
15	SJI-12	4-18	
16	SJI-13	4-18	
17	LOP-46	4-20	
18	SJI-14	4-18	

Table 4-1-14

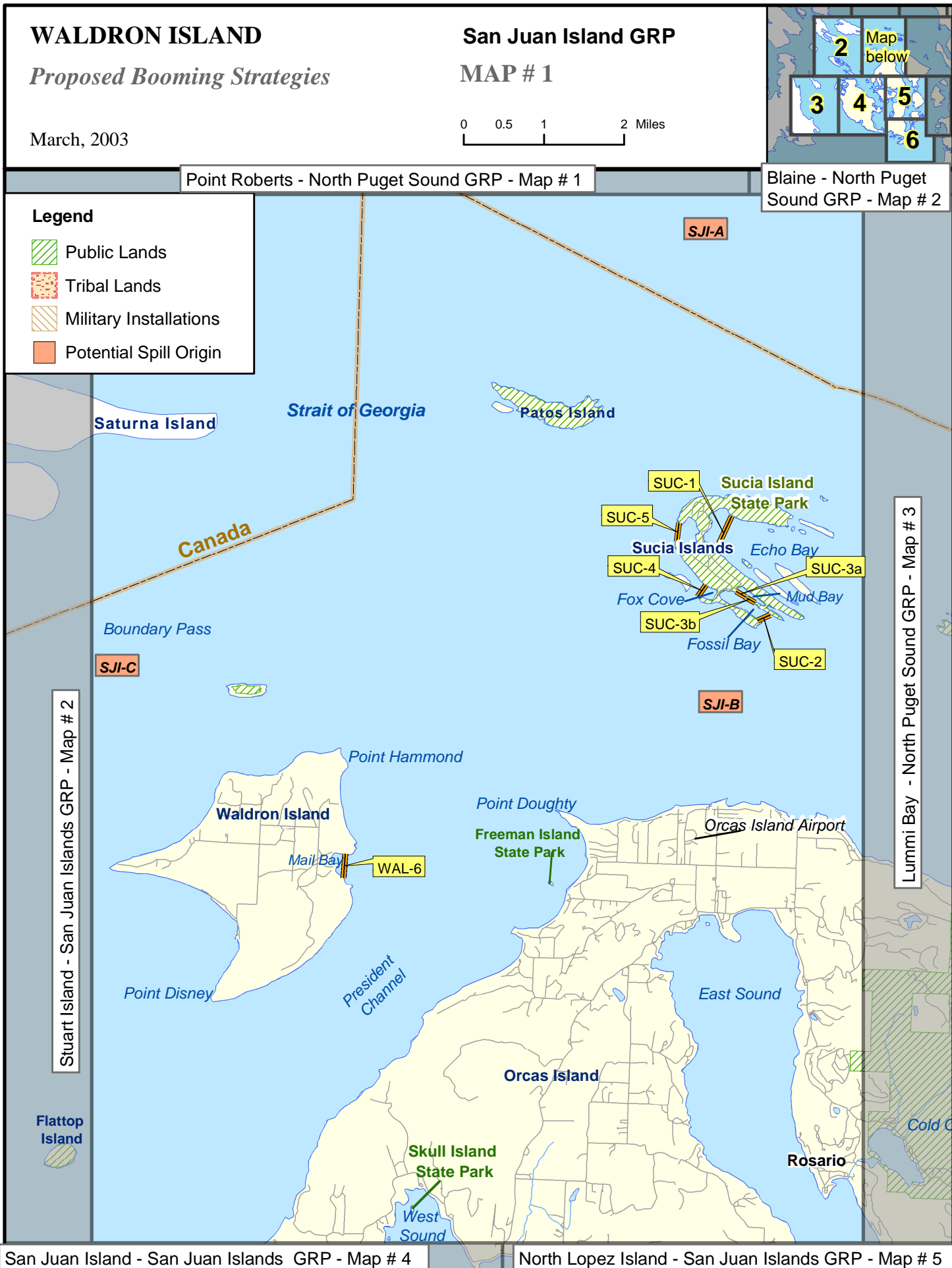
Potential Spill Origin: SJI-N - Rosario Strait, SW of Allan Island			
BOOMING PRIORITY	STRATEGY NUMBER	MAP PAGE NUMBER	COMMENTS
1	LOP-41	4-20	
2	LOP-42	4-20	
3	LOP-43	4-20	
4	LOP-44	4-20	
5	JAM-54	4-19	
6	JAM-53	4-19	

Table 4-1-15

Potential Spill Origin: SJI-O - Rosario Strait, South Entrance			
BOOMING PRIORITY	STRATEGY NUMBER	MAP PAGE NUMBER	COMMENTS
1	LOP-44	4-20	
2	LOP-43	4-20	
3	LOP-42	4-20	
4	LOP-41	4-20	
5	LOP-46	4-20	

Table 4-1-16

Potential Spill Origin: SJI-P - McArthur Banks, Strait of Juan De Fuca, South of Lopez Island			
BOOMING PRIORITY	STRATEGY NUMBER	MAP PAGE NUMBER	COMMENTS
1	LOP-44	4-20	
2	LOP-43	4-20	
3	LOP-42	4-20	
4	LOP-45	4-20	



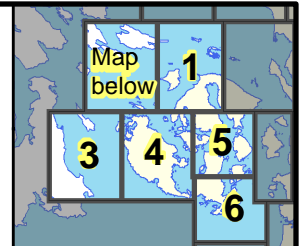
STUART ISLAND

Proposed Booming Strategies

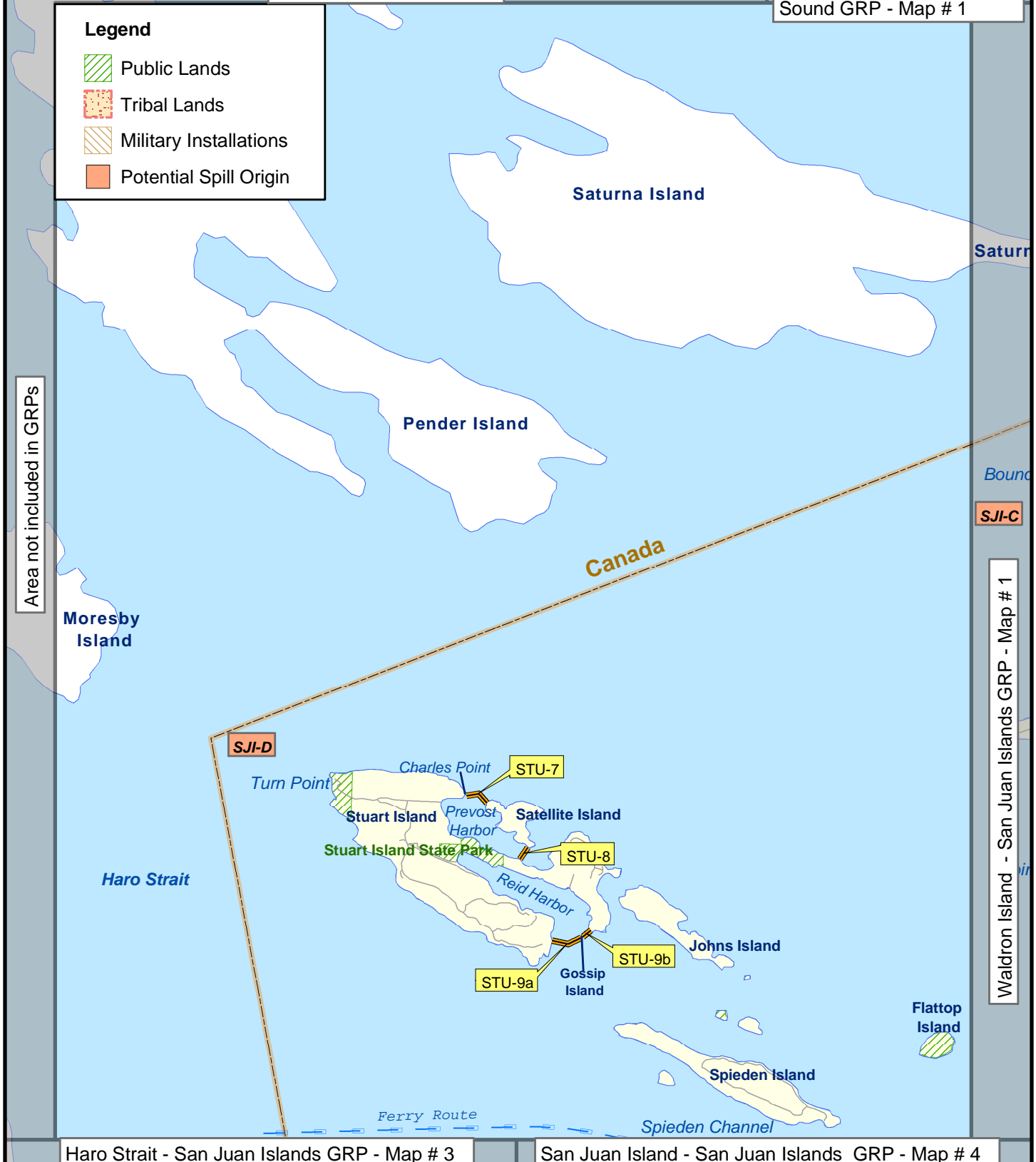
March, 2003

San Juan Island GRP

MAP # 2

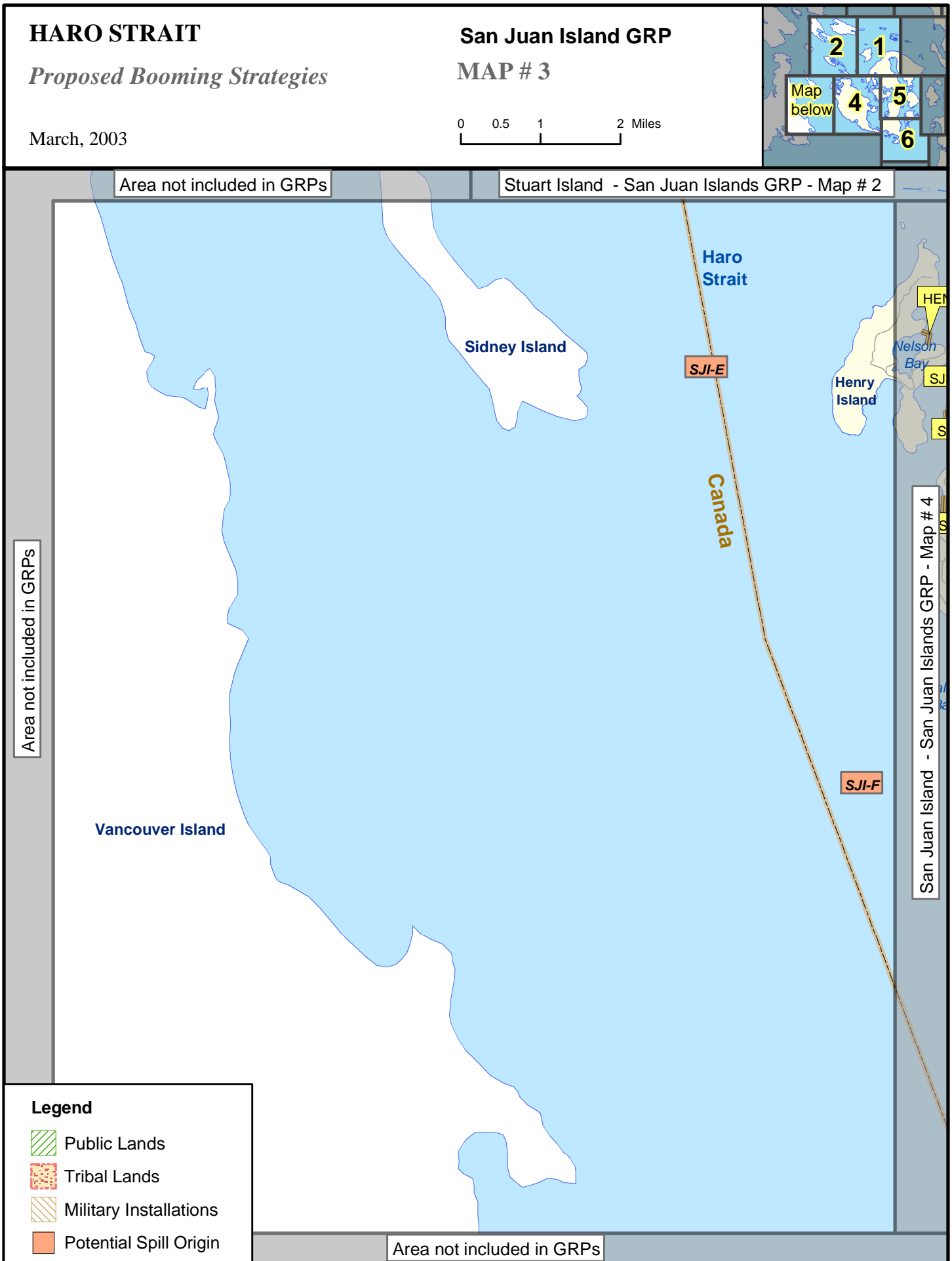


Area not included in GRPs

Point Roberts - North Puget
Sound GRP - Map # 1

Haro Strait - San Juan Islands GRP - Map # 3

San Juan Island - San Juan Islands GRP - Map # 4



SAN JUAN ISLAND

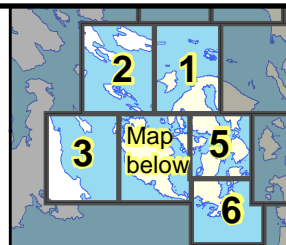
Proposed Booming Strategies

March, 2003

San Juan Island GRP

MAP # 4

0 0.5 1 2 Miles



Stuart Island - San Juan Islands GRP - Map # 2

Waldron Island - San Juan Islands GRP - Map # 1



North Lopez Island - San Juan Islands GRP - Map # 5

South Lopez Island - San Juan Islands GRP - Map # 6

Area not included in GRPs

NORTH LOPEZ ISLAND

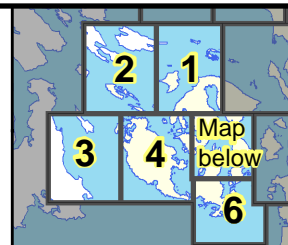
Proposed Booming Strategies

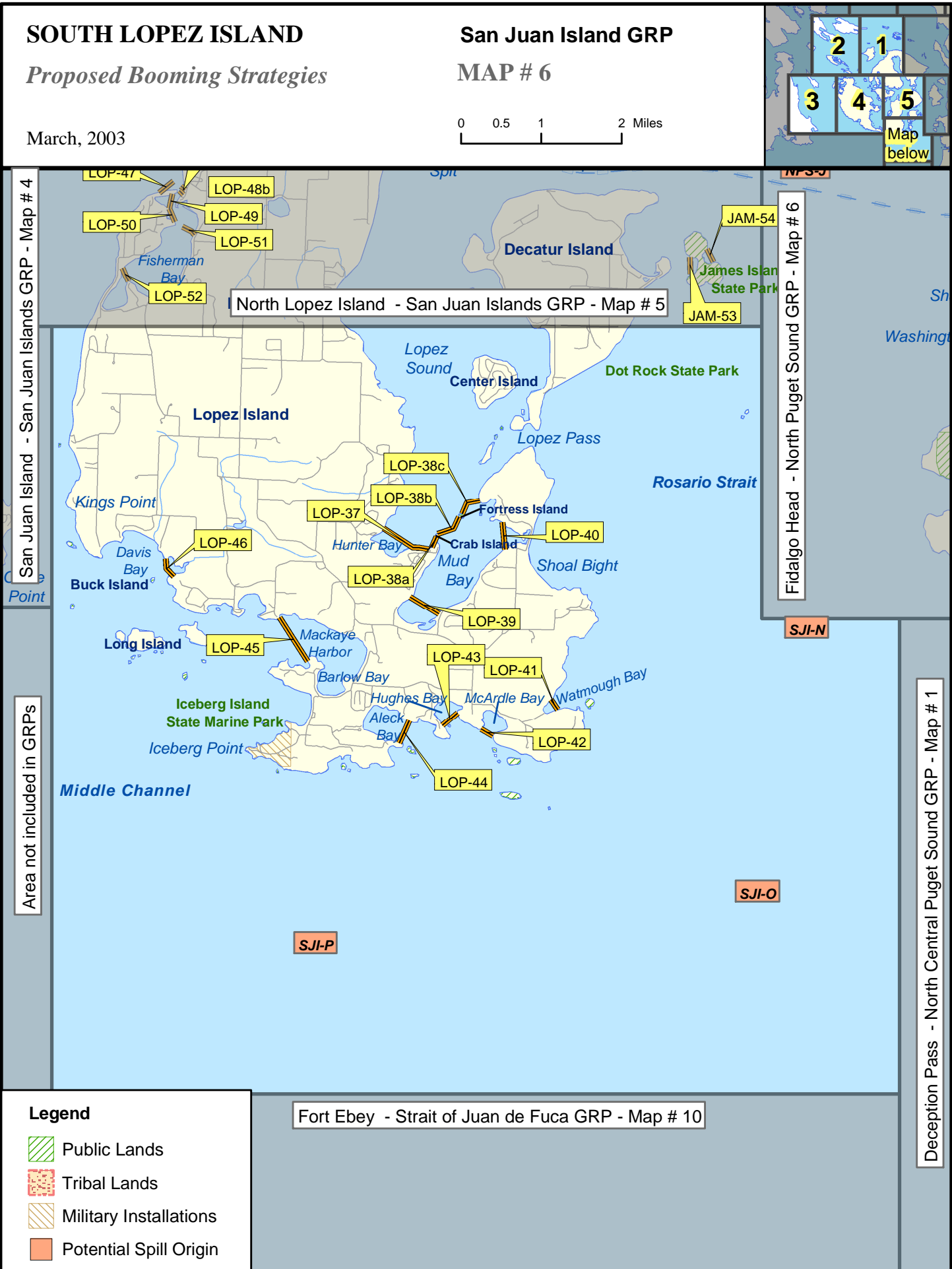
March, 2003

San Juan Island GRP

MAP # 5

0 0.5 1 2 Miles





4.3.1.2 Proposed Booming and Collection Strategies: Matrices - SAN JUAN ISLANDS

Strategy	Status	Location	Response Strategy	Length of Boom	Strategy Implementation	Staging Area	Site Access	Resources Protected
SUC-1	Field visit 10/97	Echo Bay (East side of Sucia Island) SNJ0976 48°-45.815'N 122°-54.400'W	Exclusion - Close off west end of Echo Bay.	2700'	Deploy boom across the west end of Echo Bay to protect the coves and sandy beaches. Rock anchors have been installed at the high and low tide lines on the north side of the bay. The anchors are on the east side of the rocky point that marks the east side of the entrance to the cove in the northwest corner of Echo Bay.	Stage from Brandt's Marina next to the Orcas Island Airport (SNJ0924), the Deer Harbor County dock (SNJ1196), or from Friday Harbor or Anacortes.	By boat from Anacortes, Bellingham, or Friday Harbor. No vehicle access.	State Park. Seabirds, archeological sites, sensitive bird nesting species, eelgrass beds, herring spawning, and seal haulouts.
SUC-2	Field visit 10/97	Fossil Bay (Southeast side of Sucia Island) SNJ0969 48°-44.885'N 122°-53.700'W	Exclusion - Close off entrance to bay.	1200'	Deploy boom across entrance to bay. Rock anchors have been installed at the high and low tide lines on the west side of the entrance.	Stage from Brandt's Marina next to the Orcas Island Airport (SNJ0924), the Deer Harbor County dock (SNJ1196), or from Friday Harbor or Anacortes.	By boat from Anacortes, Bellingham, or Friday Harbor. No vehicle access.	State Park. Seabirds, archeological sites, sensitive bird nesting species, eelgrass beds, herring spawning, and seal haulouts.

4.3.1.2 Proposed Booming and Collection Strategies: Matrices - SAN JUAN ISLANDS

Strategy	Status	Location	Response Strategy	Length of Boom	Strategy Implementation	Staging Area	Site Access	Resources Protected
SUC-3a	Field visit 10/97	Mud Bay - Northwest Opening (Inside Fossil Bay) SNJ0970 48°-45.145'N 122°-54.115'W	Exclusion - Close off northwest entrance to bay.	400'	Deploy boom across northwest entrance to bay, from the dock on Sucia Island to Herndon Island.	Stage from Brandt's Marina next to the Orcas Island Airport (SNJ0924), the Deer Harbor County dock (SNJ1196), or from Friday Harbor or Anacortes.	By boat from Anacortes, Bellingham, or Friday Harbor. No vehicle access.	State Park. Seabirds, archeological sites, sensitive bird nesting species, eelgrass beds, herring spawning, and seal haulouts.
SUC-3b	Field visit 10/97	Mud Bay - Southeast Opening (Inside Fossil Bay) SNJ0968 48°-45.090'N 122°-53.950'W	Exclusion - Close off southeast entrance to bay.	300'	Deploy boom across southeast entrance to bay, from Herndon Island to Wiggins Head.	Stage from Brandt's Marina next to the Orcas Island Airport (SNJ0924), the Deer Harbor County dock (SNJ1196), or from Friday Harbor or Anacortes.	By boat from Anacortes, Bellingham, or Friday Harbor. No vehicle access.	State Park. Seabirds, archeological sites, sensitive bird nesting species, eelgrass beds, herring spawning, and seal haulouts.

4.3.1.2 Proposed Booming and Collection Strategies: Matrices - SAN JUAN ISLANDS

Strategy	Status	Location	Response Strategy	Length of Boom	Strategy Implementation	Staging Area	Site Access	Resources Protected
SUC-4	New strategy 6/01	Fox Cove (Southwest corner of Sucia Island) SNJ0967 48°-45.170'N 122°-54.750'W	Exclusion - Close off entrance to cove.	1000'	Deploy boom across entrance to cove. Rock anchors have been installed at the high and low tide lines on the south side of the entrance. The high tide anchor is at the tip of the point, and the low tide anchor is NE of the high tide anchor.	Stage from Brandt's Marina next to the Orcas Island Airport (SNJ0924), the Deer Harbor County dock (SNJ1196), or from Friday Harbor or Anacortes.	By boat from Anacortes, Bellingham, or Friday Harbor. No vehicle access.	State Park. Seabirds, archeological sites, sensitive bird nesting species and seal haulouts.
SUC-5	Field visit 10/97	Shallow Bay (West side of Sucia Island) SNJ0963 48°-45.785'N 122°-55.175'W	Exclusion - Close off entrance to bay.	1200'	Deploy boom across entrance to Shallow Bay. Rock anchors have been installed at the high tide line on the north side of the entrance, and at the low tide line on the south side of the entrance.	Stage from Brandt's Marina next to the Orcas Island Airport (SNJ0924), the Deer Harbor County dock (SNJ1196), or from Friday Harbor or Anacortes.	By boat from Anacortes, Bellingham, or Friday Harbor. No vehicle access.	State Park. Seabirds, archeological sites, sensitive bird nesting species and seal haulouts.

4.3.1.2 Proposed Booming and Collection Strategies: Matrices - SAN JUAN ISLANDS

Strategy	Status	Location	Response Strategy	Length of Boom	Strategy Implementation	Staging Area	Site Access	Resources Protected
WAL-6	Field tested 4/99	Mail Bay (East side of Waldron Island) SNJ1028 48°-42.080'N 123°-0.410'W	Exclusion - Close off entrance to bay.	2000'	Deploy boom from the small rocky point south of the bay at an angle to the NE to the point between Otter Cove and Mail Bay.	Stage from Brandt's Marina next to the Orcas Island Airport (SNJ0924), the Deer Harbor County dock (SNJ1196), or from Friday Harbor or Anacortes.	By boat from Anacortes, Bellingham, or Friday Harbor. No vehicle access.	Crabs and kelp beds, abalone, sea urchins, archaeological sites.
STU-7	Field tested 11/97	Prevost Harbor - West Entrance (North side of Stuart Island) SNJ1057 & SNJ1064 48°-41.180'N 123°-11.995'W	Exclusion - Keep oil out of harbor.	1600'	Deploy boom in a chevron configuration, from Charles Point to Satellite Island. The apex of the chevron can point to the north or south, depending on conditions and whichever is most feasible.	Stage from the Deer Harbor County dock (SNJ1196), Friday Harbor, Roche Harbor, or Anacortes.	By boat from Friday Harbor, Roche Harbor, or Anacortes. No vehicle access.	Baitfish, oysters, clam beaches and beds, dungeness crab, and State Park.
STU-8	Field tested 11/97	Prevost Harbor - East Entrance (North side of Stuart Island) SNJ1051 48°-40.600'N 123°-11.290'W	Exclusion - Keep oil out of harbor.	1200'	Deploy boom from the southern tip of Satellite Island to the closest point on Stuart Island. Use extreme caution, numerous unmarked shallow rock reefs.	Stage from the Deer Harbor County dock (SNJ1196), Friday Harbor, Roche Harbor, or Anacortes.	By boat from Friday Harbor, Roche Harbor, or Anacortes. No vehicle access.	Baitfish, oysters, clam beaches and beds, dungeness crab, and State Park.

4.3.1.2 Proposed Booming and Collection Strategies: Matrices - SAN JUAN ISLANDS

Strategy	Status	Location	Response Strategy	Length of Boom	Strategy Implementation	Staging Area	Site Access	Resources Protected
STU-9a	Field tested 11/97	Reid Harbor - West Entrance (South side of Stuart Island) SNJ1083 & SNJ1099 48°-39.675'N 123°-10.565'W	Exclusion - Keep oil out of harbor.	1800'	Deploy boom in a chevron configuration, from the west side of Gossip Island, west to Stuart Island. The apex of the chevron can point to the north or south, depending on conditions and whichever is most feasible.	Stage from the Deer Harbor County dock (SNJ1196), Friday Harbor, Roche Harbor, or Anacortes.	By boat from Friday Harbor, Roche Harbor, or Anacortes. No vehicle access.	Baitfish, oysters, clam beaches and beds, dungeness crab, and State Park.
STU-9b	Field tested 11/97	Reid Harbor - East Entrance (South side of Stuart Island) SNJ1099 48°-39.825'N 123°-10.305'W	Exclusion - Keep oil out of harbor.	300'	Deploy boom from the east side of Gossip Island, east to Stuart Island.	Stage from the Deer Harbor County dock (SNJ1196), Friday Harbor, Roche Harbor, or Anacortes.	By boat from Friday Harbor, Roche Harbor, or Anacortes. No vehicle access.	Baitfish, oysters, clam beaches and beds, dungeness crab, and State Park.
SJI-10	Field visit 4/99	Neil Bay - Inside Davison Head (North end of San Juan Island, northeast of Roche Harbor) SNJ0119 48°-37.310'N 123°-8.585'W	Exclusion - Keep oil out of Neil Bay.	1000'	Deploy boom from point on the south shore of the bay entrance across to the north shore.	Stage from Friday Harbor, Roche Harbor, or Anacortes.	By boat from Friday Harbor, Roche Harbor, or Anacortes. Vehicle access to the west end of the bay, from Friday Harbor ferry, go north on Roche Harbor Road.	Seabird concentrations, eelgrass beds, and sea urchins.
SJI-11	New strategy 9/01	UW Friday Harbor Marine Laboratories SNJ0072 48°-32.720'N 123°-0.735'W	Exclusion - Keep oil off shoreline and docks for lab.	800'	Deploy boom from points on each side of the dock and enclose the dock.	Stage from the laboratory parking lot, or from Friday Harbor Marina or Shipyard Cove Marina.	By boat from Friday Harbor or Anacortes. Vehicle access from Friday Harbor on the road to the Friday Harbor Labs.	University of Washington marine preserve.

4.3.1.2 Proposed Booming and Collection Strategies: Matrices - SAN JUAN ISLANDS

Strategy	Status	Location	Response Strategy	Length of Boom	Strategy Implementation	Staging Area	Site Access	Resources Protected
SJI-12	Field visit 5/99	Beaverton Cove (Cove north of the Friday Harbor Marina and east of the Friday Harbor Labs) SNJ0071 48°-32.650'N 123°-0.985'W	Exclusion - Keep oil out of cove.	900'	Deploy boom across entrance to cove.	Stage from Friday Harbor Marina or Shipyard Cove Marina.	By boat from Friday Harbor or Anacortes. Vehicle access from Friday Harbor on the road to the Friday Harbor Labs.	University of Washington preserve in cove and some wildlife concentrations.
SJI-13	Field tested 1997	Argyle Lagoon - North Bay (East side of San Juan Island) SNJ0031 48°-31.160'N 123°-0.840'W	Exclusion - Keep oil out of lagoon.	500'	Deploy boom across outer lagoon entrance.	Stage at the boat ramp at the end of Jackson Beach Road, or from Friday Harbor or Anacortes.	By boat from Anacortes or Friday Harbor. Vehicle access from Friday Harbor on Argyle Ave to Pear Point Road to Jackson Beach Road.	Wetlands, UW lab, lagoon, bird and baitfish habitat, harbor seal haulout, sensitive nesting species, diving ducks, herons, loons, and geoducks.
SJI-14	Field tested 1997	Jakles Lagoon (South end of Griffin Bay, east side of San Juan Island) SNJ0015 48°-27.740'N 122°-59.350'W	Exclusion - Keep oil out of lagoon.	100'	Most of the year, a gravel bar across the entrance of the lagoon is too high for oil to enter the lagoon, but winter storms may form openings in the bar. Contact the National Park to determine status of opening. Place boom across opening, or block with logs, etc.	Stage from parking area above the lagoon, or from Friday Harbor or Anacortes.	By boat from Anacortes or Friday Harbor. Vehicle access from Friday Harbor on Argyle Ave to Cattle Point Road to a parking lot above the lagoon, must get permission from the National Park to take an all terrain vehicle down to lagoon.	Wetlands, bird and baitfish habitat, harbor seal haulouts, sensitive nesting species diving ducks, herons, loons.

4.3.1.2 Proposed Booming and Collection Strategies: Matrices - SAN JUAN ISLANDS

Strategy	Status	Location	Response Strategy	Length of Boom	Strategy Implementation	Staging Area	Site Access	Resources Protected
SJI-15	Field tested 5/97	False Bay (Southwest side of San Juan Island) SNJ0292 48°-28.875'N 123°-4.295'W	Exclusion/ Collection - Keep oil out of bay or divert oil to collection point on beach where it can be recovered.	2300'	Deploy 2000' of boom at an angle across the entrance of the bay. May be possible to collect oil at a small pocket beach on the east side (SNJ0298). Use the remaining 300' of boom to direct the oil to the collection site.	Stage from parking area at head of bay, or from Friday Harbor or Anacortes.	By boat from Anacortes or Friday Harbor. Vehicle access to Kanaka Point (west side of bay) from False Bay Road to Bailer Hill Road to Kanaka Bay Road. Access to the beach on the east side from False Bay Road through the Mar Vista Resort (call for access 360-378-4448).	Shallow, rocky estuary, exposed mudflats at low tide - eagle nests in trees on bay shoreline, feeding shorebirds and waterfowl wintering area (fall through spring), dungeness crab, eelgrass, ulva, sand lance spawning, and sand shrimp.
SJI-16	New strategy 9/01	Smallpox Bay - County Park (Northwest side of San Juan Island) SNJ0261 48°-32.430'N 123°-9.655'W	Exclusion - Keep oil out of bay.	400'	Deploy boom across the entrance to the bay.	Stage from the county park parking lot, or from Friday Harbor, Roche Harbor, or Anacortes.	By boat from a small ramp at the county park, Friday Harbor, Roche Harbor, or Anacortes. Vehicle access from Friday Harbor ferry, go west on Beaverton Valley Road to West Valley Road to Mitchell Bay Road to West Side Road.	San Juan County Park, heavily used public recreational area; waterfowl concentrations.

4.3.1.2 Proposed Booming and Collection Strategies: Matrices - SAN JUAN ISLANDS

Strategy	Status	Location	Response Strategy	Length of Boom	Strategy Implementation	Staging Area	Site Access	Resources Protected
SJI-17	Field tested 5/97	Mitchell Bay, outer entrance (Northwest side of San Juan Island) SNJ0181 48°-34.370'N 123°-10.145'W	Exclusion - Keep oil out of bay.	1600'	Deploy boom across the outer bay entrance. If conditions do not permit deployment as described, fall back into the bay and deploy 1000' of boom from the point on the north shore directly north of the marina to the south shore west of the marina.	Stage from the Mitchell Bay Marina, or from Friday Harbor, Roche Harbor, or Anacortes.	By boat from Friday Harbor, Roche Harbor, or Anacortes. Vehicle access to the Mitchell Bay Marina (SNJ0192), from Friday Harbor ferry, go west on Beaverton Valley Road to West Valley Road to Mitchell Bay Road.	Waterfowl concentrations, baitfish, archeological sites, and dungeness crab.
SJI-18	Field tested 5/97	Mitchell Bay, entrance to inner bay (NW side of San Juan Island) SNJ0182 48°-35.160'N 123°-9.860'W	Exclusion - Keep oil out of the inner bay.	500'	Deploy boom across the inner bay entrance. Angle boom to north shoreline on point for possible collection from private property.	Stage from the Mitchell Bay Marina, or from Friday Harbor, Roche Harbor, or Anacortes.	By boat from Friday Harbor, Roche Harbor, or Anacortes. Vehicle access to the Mitchell Bay Marina (SNJ0192), from Friday Harbor ferry, go west on Beaverton Valley Road to West Valley Road to Mitchell Bay Road.	Waterfowl concentrations, baitfish, archeological sites, and dungeness crab. Mudflat and tidal marsh habitat.

4.3.1.2 Proposed Booming and Collection Strategies: Matrices - SAN JUAN ISLANDS

Strategy	Status	Location	Response Strategy	Length of Boom	Strategy Implementation	Staging Area	Site Access	Resources Protected
SJI-19a	Field tested 9/98	Horseshoe Bay (Entrance to Westcott and Garrison Bays, NW corner of San Juan Island) SNJ0138 48°-35.385'N 123°-10.205'W	Deflection/ Collection - Keep oil out of Westcott and Garrison Bays.	2400'	Deploy boom in three chevrons with the apex pointing into Westcott Bay. Deploy the first chevron just inside the entrance using 400' on each leg with an apex angle of about 35 degrees. Deploy two similar chevrons further inside the entrance. Current through the entrance is strong during flood tide, but the first two chevrons will slow the oil enough so collection with a skimmer will be effective at the apex of the third chevron.	Stage from Friday Harbor, Roche Harbor, or Anacortes. Potential staging from Westcott Bay SeaFarm.	By boat from Friday Harbor, Roche Harbor, or Anacortes. Vehicle access to the Westcott Bay SeaFarm dock (SNJ0154), from Friday Harbor ferry, go north on Roche Harbor Road.	Seabirds, waterfowl, seals, clam beds, dungeness crab, oysters, herring spawning, and archeological sites.
SJI-19b	Field tested 9/98	White Point (North side of entrance to Westcott and Garrison Bays) SNJ0138 48°-35.435'N 123°-10.280'W	Deflection - Deflect oil out into center of channel for collection at SJI-19a.	300'	Deploy boom from the end of White Point to deflect the oil out to the collection strategy.	Stage from Friday Harbor, Roche Harbor, or Anacortes. Potential staging from Westcott Bay SeaFarm.	By boat from Friday Harbor, Roche Harbor, or Anacortes. Vehicle access to the Westcott Bay SeaFarm dock (SNJ0154), from Friday Harbor ferry, go north on Roche Harbor Road.	Westcott and Garrison Bays resources. Seabirds, waterfowl, seals, clam beds, dungeness crab, oysters, herring spawning, and archeological sites.

4.3.1.2 Proposed Booming and Collection Strategies: Matrices - SAN JUAN ISLANDS

Strategy	Status	Location	Response Strategy	Length of Boom	Strategy Implementation	Staging Area	Site Access	Resources Protected
SJI-19c	Field tested 9/98	Delacombe Point (South side of entrance to Westcott and Garrison Bays) SNJ0175 48°-35.305'N 123°-10.230'W	Deflection - Deflect oil out into center of channel for collection at SJI-19a.	400'	Deploy boom from the end of Delacombe Point to deflect the oil out to the collection strategy.	Stage from Friday Harbor, Roche Harbor, or Anacortes. Potential staging from Westcott Bay SeaFarm.	By boat from Friday Harbor, Roche Harbor, or Anacortes. Vehicle access to the Westcott Bay SeaFarm dock (SNJ0154), from Friday Harbor ferry, go north on Roche Harbor Road.	Westcott and Garrison Bays resources. Seabirds, waterfowl, seals, clam beds, dungeness crab, oysters, herring spawning, and archeological sites.
SJI-20	Field tested 9/98	Garrison Bay (NW side of San Juan Island) SNJ0159 (east side), SNJ0172 (west side) 48°-35.350'N 123°-9.090'W	Exclusion/ Deflection/ Collection - Keep oil out of bay.	1300'	Deploy boom in a chevron configuration at the entrance to the bay, from the west shore of Bell Point to the opposite shoreline to the west. Deploy with the apex pointing into Garrison Bay, and collect at the apex with a skimmer during flood tide.	Stage from Friday Harbor, Roche Harbor, or Anacortes. Potential staging from Westcott Bay SeaFarm.	By boat from Friday Harbor, Roche Harbor, or Anacortes. Vehicle access to the Westcott Bay SeaFarm dock (SNJ0154), from Friday Harbor ferry, go north on Roche Harbor Road.	Garrison Bay resources. National Park (English Camp). Seabirds, waterfowl, seals, clam beds, dungeness crab, oysters, herring spawning, and archeological sites.
SJI-21	Field tested 9/98	Westcott Bay SNJ0141 (NW side of San Juan Island), SNJ0158 (SE side at Bell Point) 48°-35.735'N 123°-9.495'W	Exclusion/ Deflection/ Collection - Keep oil out of bay.	2300'	Deploy boom in a chevron configuration at the entrance to the bay from the north tip of Bell Point to the northeast shore of White Point. Deploy with the apex pointing into Westcott Bay, and collect at the apex with a skimmer during flood tide.	Stage from Friday Harbor, Roche Harbor, or Anacortes. Potential staging from Westcott Bay SeaFarm.	By boat from Friday Harbor, Roche Harbor, or Anacortes. Vehicle access to the Westcott Bay SeaFarm dock (SNJ0154), from Friday Harbor ferry, go north on Roche Harbor Road.	Westcott Bay resources. Seabirds, waterfowl, seals, clam beds, dungeness crab, oysters, herring spawning, and archeological sites.

4.3.1.2 Proposed Booming and Collection Strategies: Matrices - SAN JUAN ISLANDS

Strategy	Status	Location	Response Strategy	Length of Boom	Strategy Implementation	Staging Area	Site Access	Resources Protected
SJI-22	Field visit 4/99	Roche Harbor (NW corner of San Juan Island) SNJ0130 48°-36.440'N 123°-9.315'W	Exclusion - Keep oil out of tidal marsh.	300'	Deploy boom across the entrance to the tidal marsh south of the Roche Harbor Marina.	Stage from the Roche Harbor Marina, or from the boat ramp parking lot on the east side of the marsh entrance.	By boat from Friday Harbor, Roche Harbor, or Anacortes. Vehicle access to the east side of the marsh, from Friday Harbor ferry, go north on Roche Harbor Road.	Herring spawning, marsh habitat, waterfowl.
HEN-23	Field tested 10/97	Nelson Bay (Henry Island, NW corner of San Juan Island) SNJ0206 48°-36.275'N 123°-10.705'W	Exclusion - Keep oil out of bay.	1400'	Deploy boom in a chevron configuration at the entrance to the bay.	Stage from Friday Harbor, Roche Harbor, or Anacortes.	By boat from Friday Harbor, Roche Harbor, or Anacortes. No vehicle access.	Wetlands, waterfowl habitat, baitfish, dungeness crab, and eelgrass beds.
JON-24	Field visit 8/01	Jones Island - North Side Cove (West of Orcas Island) SNJ1367 48°-37.130'N 123°-2.785'W	Exclusion - Keep oil out of the cove.	1000'	Deploy boom across the narrowest point of the entrance to the cove on the north side of the island. Attach boom to shore or trees, and anchor to maintain position.	Stage from Friday Harbor or Anacortes.	By boat from Friday Harbor or Anacortes. No vehicle access.	State Park public recreational area.
JON-25	Field visit 8/01	Jones Island - South Side Cove (West of Orcas Island) SNJ1372 48°-36.700'N 123°-2.715'W	Exclusion - Keep oil out of the cove.	1500'	Deploy boom to protect both small coves on the south side of the island. Very exposed. If unable to protect both coves, pull back and try to protect the cove to the west.	Stage from Friday Harbor or Anacortes.	By boat from Friday Harbor or Anacortes. No vehicle access.	State Park public recreational area.

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Strategy	Status	Location	Response Strategy	Length of Boom	Strategy Implementation	Staging Area	Site Access	Resources Protected
ORC-26	New strategy 9/01	Deer Harbor - Cove on the West side of the Harbor (Southwest side of Orcas Island) SNJ1189 48°-37.325'N 123°-0.405'W	Exclusion - Keep oil out of the cove.	500'	Deploy boom across the entrance to the cove.	Stage from the Deer Harbor County dock (SNJ1196), or from Friday Harbor or Anacortes.	By boat from Friday Harbor or Anacortes. Vehicle access from Orcas Island ferry, go west and north from the ferry to the Horseshoe Highway, then go west on Deer Harbor Road to Deer Harbor.	Waterfowl concentrations, small stream at the head of the cove.
ORC-27	Field tested 11/97	Deer Harbor - Lagoon at far North end of the Harbor (Southwest side of Orcas Island) SNJ1190 48°-37.475'N 123°-0.235'W	Exclusion/ Collection - Keep oil out of inner harbor/ lagoon, collect with vac truck at road.	800'	Deploy boom from the west side of the harbor just south of the bridge at an angle to the southeast to the east side of the harbor. Collect oil with a vac truck from the road on the west side of the harbor.	Stage along road on west side of harbor, from the Deer Harbor County dock (SNJ1196), or from Friday Harbor or Anacortes.	By boat from Friday Harbor or Anacortes. Vehicle access from Orcas Island ferry, go west and north from the ferry to the Horseshoe Highway, then go west on Deer Harbor Road to Deer Harbor.	Dungeness crab, oysters, sea urchins, and mudflats.
ORC-28	Field tested 5/98	Buck Bay (Orcas Island, east side of East Sound) SNJ0829 48°-37.475'N 123°-0.235'W	Exclusion - Keep oil out of bay.	1400'	Deploy boom in a chevron configuration from the dock on the west side to the Johnston's property on the east side. This location keeps the boom in water even at low tide, most of bay becomes a mudflat at low tide. Be aware of two pinnacle rocks near the entrance of the bay.	Stage from the parking area at the dock in Olga, or from Friday Harbor or Anacortes.	By boat from Friday Harbor or Anacortes. Vehicle access from Orcas Island ferry, go west and north from the ferry to the Horseshoe Highway and follow to Olga and Buck Bay.	Dungeness crab, clam beds, and mudflat habitat.

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Strategy	Status	Location	Response Strategy	Length of Boom	Strategy Implementation	Staging Area	Site Access	Resources Protected
SHA-29a	Field tested 9/99	Blind Bay - West Opening (North side of Shaw Island) SNJ0368 48°-35.085'N 122°-56.385'W	Exclusion - Keep oil out of bay.	1000'	Deploy boom from the west side of Blind Island to pilings at a dock on Shaw Island. Be aware of shallow rocks just north of the booming location (site of numerous groundings).	Stage from Bayhead Marina on Orcas Island just east of the ferry dock.	By boat from Friday Harbor or Anacortes. Vehicle access to the Shaw Island ferry terminal.	Seabirds, diving ducks, herring and smelt spawning, sandlance larvae, dungeness crab and sea urchins.
SHA-29b	Field tested 9/99	Blind Bay - East Opening (North side of Shaw Island) SNJ0358 48°-35.070'N 122°-56.035'W	Exclusion - Keep oil out of bay.	1800'	Deploy boom from a piling south and west of the Shaw Island Ferry Dock to the east side of Blind Island. Also run boom from piling to shore to close short gap. Boom can be deployed in a chevron configuration with the apex pointing into or out of the bay, depending on conditions and whichever is most feasible.	Stage from Bayhead Marina on Orcas Island just east of the ferry dock.	By boat from Friday Harbor or Anacortes. Vehicle access to the Shaw Island ferry terminal.	Seabirds, diving ducks, herring and smelt spawning, sandlance larvae, dungeness crab and sea urchins.
SHA-30	Field tested 9/99	Picnic Cove (Southeast side of Shaw Island) SNJ0345 48°-33.840'N 122°-55.280'W	Exclusion - Keep oil out of Picnic Cove.	1000'	Deploy boom across entrance to Picnic Cove, shoreline is private property.	Stage from the county park beach in Indian Cove, or Friday Harbor or Anacortes.	By boat from Friday Harbor or Anacortes.	Archeological sites, dungeness crab.
SHA-31	Field tested 9/99	Indian Cove (Southeast side of Shaw Island) SNJ0336 48°-33.735'N 122°-56.265'W	Exclusion - Keep oil out of cove.	2000'	Deploy boom to protect the shoreline in the northwest corner of Indian Cove (South Beach area).	Stage from the county park beach in Indian Cove, or from Friday Harbor or Anacortes.	By boat from Friday Harbor or Anacortes. Vehicle access from the Shaw Island ferry terminal on Blind Bay Road to Squaw Bay Road.	Archeological sites, dungeness crab, Shaw County park.

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Strategy	Status	Location	Response Strategy	Length of Boom	Strategy Implementation	Staging Area	Site Access	Resources Protected
SHA-32	Field tested 9/99	Squaw Bay (Southeast side of Shaw Island) SNJ0333 48°-33.480'N 122°-56.650'W	Exclusion/ Deflection/ Collection - Keep oil out of bay. Deflect oil to east shore for collection.	1000'	Deploy boom at an angle across the entrance to the bay from a sandy beach on the west side of the entrance, northeast to the east shore of the entrance. The boom on the east shore can be placed so it will deflect oil into a small cove on the east shore for collection with a skimmer.	Stage from the road at the head of the bay (SNJ0332), or Friday Harbor or Anacortes.	By boat from Friday Harbor or Anacortes. Vehicle access from the Shaw Island ferry terminal on Blind Bay Road to Squaw Bay Road.	Dungeness crab, oysters, archeological sites, shore birds, waterfowl, and tideflats.
SHA-33	Field tested 4/99	Parks Bay (Southwest side of Shaw Island) SNJ0403 48°-33.850'N 122°-59.070'W	Exclusion - Keep oil out of bay.	2000'	Deploy boom near outer entrance to Parks Bay from the small island at the north end of the bay to the north end of the Point George Peninsula. The pass on the north side of the island is open only on a very high tide, boom if necessary with 100'. Strong currents run north and south past the entrance to the bay, and currents moving in and out of the bay are gentle. Oil would tend to move past the bay, and would only be pushed into the bay by the wind.	Stage from Friday Harbor or Anacortes.	By boat from Friday Harbor, Anacortes or Bellingham.	Archeological sites, shorebirds, waterfowl, tidal flats, and dungeness crab.
LOP-34	Field visit 3/96	Shoal Bay Lagoon (Northeast side of Lopez Island) SNJ0559 48°-33.200'N 122°-52.370'W	Exclusion - Keep oil out of the lagoon at the southeast end of Shoal Bay.	100'	Deploy boom in front of the lagoon culvert. Blocking the culvert with boards, sandbags, etc. would be more effective.	Stage from Port Stanley Road, or at the gravel pit adjacent to the lagoon.	Vehicle access from the Lopez Island ferry terminal on Ferry Road to Port Stanley Road, or by boat from Friday Harbor or Anacortes.	Seabirds, diving ducks, herring, smelt, sandlance larvae, and dungeness crab.

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Strategy	Status	Location	Response Strategy	Length of Boom	Strategy Implementation	Staging Area	Site Access	Resources Protected
LOP-35	Field visit 3/96	Swift Bay Lagoon (Northeast side of Lopez Island) SNJ0546 48°-32.500'N 122°-52.440'W	Exclusion - Keep oil out of the lagoon at the south end of Swift Bay.	100'	Deploy boom in front of the lagoon culvert. Blocking the culvert with boards, sandbags, etc. would be more effective.	Stage from Port Stanley Road, or at the gravel pit adjacent to the lagoon.	Vehicle access from the Lopez Island ferry terminal on Ferry Road to Port Stanley Road, or by boat from Friday Harbor or Anacortes.	Seabirds, diving ducks, brant feeding area, and dungeness crab.
LOP-36	Field visit 3/96	Spencer Spit Lagoon (Northeast side of Lopez Island) SNJ0541 48°-32.245'N 122°-51.410'W	Exclusion - Keep oil out of the lagoon on Spencer Spit.	100'	Deploy boom in front of the lagoon entrance. Blocking the entrance with boards, sandbags, etc. would be more effective.	Stage near the lagoon on the Spencer Spit State Park access road.	Vehicle access from the Lopez Island ferry terminal on Ferry Road to Port Stanley Road to the Spencer Spit State Park, or by boat from Friday Harbor or Anacortes.	Seabirds, brant feeding area, clam beds, tidal marsh.
LOP-37	Field visit 7/99	Hunter Bay (Southeast side of Lopez Island) SNJ0502	Exclusion/ Collection - Keep oil out of bay. Use currents to aid in collection.	3500'	Deploy 2600' of boom from the north shore of the bay at 48°-27.795'N 122°-51.530'W (SNJ0507) to the south shore at 48°-27.570'N 122°-51.025'W (SNJ0503). Deploy an additional 900' of boom from the end of the boom on the south shore to the county dock (SNJ0502), running the boom parallel to the shoreline. Currents during flood tide will push oil to the dock for collection. Additional boom could be deployed north from the dock to improve collection efficiency.	Stage from the county dock at the southeast corner of Hunter Bay, or from Anacortes, Friday Harbor, or Skyline Marina.	By boat from the county dock and ramp, Anacortes, Friday Harbor, or Skyline Marina. Vehicle access from the Lopez Island ferry terminal on Ferry Road to Center Road to Mud Bay Road to Islandale Road.	Seabirds, diving ducks, archaeological sites, smelt, herring, sandlance larvae, and dungeness crab.

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Strategy	Status	Location	Response Strategy	Length of Boom	Strategy Implementation	Staging Area	Site Access	Resources Protected
LOP-38a	Field tested 7/99	Mud Bay - From the West Shore to Crab Island (Southeast side of Lopez Island) SNJ0502 48°-27.650'N 122°-50.740'W	Exclusion - Keep oil out of the bay.	800'	Deploy boom from Crab Island to the county dock on the west shore. Oil moving past the county dock will be directed to the booms east of Crab Island for collection.	Stage from the county dock at the southeast corner of Hunter Bay, or from Anacortes, Friday Harbor, or Skyline Marina.	By boat from the county dock and ramp, Anacortes, Friday Harbor, or Skyline Marina. Vehicle access from the Lopez Island ferry terminal on Ferry Road to Center Road to Mud Bay Road to Islandale Road.	Seabirds, diving ducks, archaeological sites, smelt, herring spawning, sand lance larvae, and dungeness crab.
LOP-38b	Field tested 7/99	Mud Bay - From Crab Island to Fortress Island (Southeast side of Lopez Island) SNJ0484 48°-27.810'N 122°-50.450'W	Exclusion - Keep oil out of the bay.	1800'	Deploy boom from Crab Island to Fortress Island in a chevron configuration with the apex pointed into Mud Bay. Rock anchors have been installed at the high and low tide lines on the southwest corner of Fortress Island, directly across from Crab Island. Oil moving past the county dock and Crab Island will be directed to this boom for collection with a skimmer. Current moving between the islands may be fairly strong.	Stage from the county dock at the southeast corner of Hunter Bay, or from Anacortes, Friday Harbor, or Skyline Marina.	By boat from the county dock and ramp, Anacortes, Friday Harbor, or Skyline Marina. Vehicle access from the Lopez Island ferry terminal on Ferry Road to Center Road to Mud Bay Road to Islandale Road.	Seabirds, diving ducks, archaeological sites, smelt, herring spawning, sand lance larvae, and dungeness crab.

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Strategy	Status	Location	Response Strategy	Length of Boom	Strategy Implementation	Staging Area	Site Access	Resources Protected
LOP-38c	Field tested 7/99	Mud Bay - From Fortress Island to the Sperry Peninsula shore (Southeast side of Lopez Island) SNJ0485 48°-27.995'N 122°-50.090'W	Exclusion - Keep oil out of the bay.	1700'	Deploy boom from Fortress Island to the shore on the Sperry Peninsula. Oil entrained under the boom between Crab Island and Fortress Island may circle around the bay and move north to this boom.	Stage from the county dock at the southeast corner of Hunter Bay, or from Anacortes, Friday Harbor, or Skyline Marina.	By boat from the county dock and ramp, Anacortes, Friday Harbor, or Skyline Marina. Vehicle access from the Lopez Island ferry terminal on Ferry Road to Center Road to Mud Bay Road to Islandale Road.	Seabirds, diving ducks, archaeological sites, surf smelt, herring spawning, sand lance larvae, and dungeness crab.
LOP-39	New strategy 8/01	Mud Bay - Backup for LOP-38 SNJ0496	Exclusion - Keep oil out of the bay.	2500'	Deploy boom from the north shore of the bay at 48°-27.050'N 122°-51.070'W (SNJ0498) to the south shore at 48°-26.920'N 122°-50.515'W (SNJ0494).	Stage from the county dock at the southeast corner of Hunter Bay, or from Anacortes, Friday Harbor, or Skyline Marina.	By boat from the county dock and ramp, Anacortes, Friday Harbor, or Skyline Marina. Vehicle access from the Lopez Island ferry terminal on Ferry Road to Center Road to Mud Bay Road to Islandale Road.	Seabirds, diving ducks, archaeological sites, surf smelt, herring spawning, sand lance larvae, and dungeness crab.

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Strategy	Status	Location	Response Strategy	Length of Boom	Strategy Implementation	Staging Area	Site Access	Resources Protected
LOP-40	New strategy 8/01	Mud Bay - Backup for LOP-38 (Mud Bay side of Shoal Bight) SNJ0488 48°-27.705'N 122°-49.745'W	Exclusion - Keep oil out of the bay.	2100'	Deploy boom across the entrance to the cove to protect the lagoon and tidal marsh.	Stage from the county dock at the southeast corner of Hunter Bay, or from Anacortes, Friday Harbor, or Skyline Marina.	By boat from the county dock and ramp, Anacortes, Friday Harbor, or Skyline Marina. Vehicle access from the Lopez Island ferry terminal on Ferry Road to Center Road to Mud Bay Road to Islandale Road.	Seabirds, diving ducks, archaeological sites, surf smelt, herring spawning, sand lance larvae, brant feeding area, tidal marsh, and dungeness crab.
LOP-41	Field tested 9/99	Watmough Bay (Southeast corner of Lopez Island in Rosario Straits) SNJ0456 48°-25.915'N 122°-48.710'W	Exclusion - Keep oil out of the bay.	1000'	Deploy boom across bay at a point about half way into the bay. Feasibility depends on the direction and speed of the wind. This site is usually protected and the boom is easy to set.	Stage from Anacortes, Skyline Marina, or Port Angeles.	By boat from Anacortes, Port Angeles, or Skyline Marina.	Nesting and foraging seabirds, foraging and resting habitat for marbled murrelets. Sensitive nesting species site at the head of the bay.
LOP-42	Field tested 9/99	McArdle Bay (South end of Lopez Island) SNJ0443 48°-25.600'N 122°-49.780'W	Exclusion/ Collection - Keep oil out of the bay, or use a collection site.	1000'	Deploy boom across the entrance to the bay if conditions are favorable, site is exposed and often rough. Currents and wind tend to push oil into the bay. To use the bay for collection, deploy the boom out from each side of the entrance to enhance collection. Move boom across the entrance of the bay to keep the oil in the bay during ebb tide.	Stage from Anacortes, Skyline Marina, or Port Angeles.	By boat from Anacortes, Friday Harbor, or Skyline Marina. Vehicle access from the Lopez Island ferry terminal to the beach at the head of Aleck Bay via private roads.	Nesting and foraging seabirds, foraging and resting habitat for marbled murrelets.

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Strategy	Status	Location	Response Strategy	Length of Boom	Strategy Implementation	Staging Area	Site Access	Resources Protected
LOP-43	Field tested 9/99	Hughes Bay (South end of Lopez Island) SNJ0438 48°-25.730'N 122°-50.375'W	Exclusion/ Collection - Keep oil out of the bay, or use a collection site.	1500'	Deploy boom across the entrance to the bay if conditions are favorable, site is exposed and often rough. With wind from the south or southwest, the boom can be deployed from the west side of the bay entrance to a point at the head of the bay to the north, which will protect most of the bay. Currents and wind tend to push oil into the bay. To use the bay for collection, deploy the boom out from each side of the entrance to enhance collection. Move boom across the entrance of the bay to keep the oil in the bay during ebb tide.	Stage from Anacortes, Skyline Marina, or Port Angeles.	By boat from Anacortes, Port Angeles, or Skyline Marina. Vehicle access from the Lopez Island ferry terminal to the beach at the head of Aleck Bay via private roads.	Nesting and foraging seabirds, foraging and resting habitat for marbled murrelets.
LOP-44	Field tested 9/99	Aleck Bay (South end of Lopez Island) SNJ0429 48°-25.560'N 122°-51.090'W	Exclusion - Keep oil out of the bay.	1700'	Deploy boom across the narrowest point at the mouth of the bay. Aleck Bay is the least exposed of the three strategies in this area, and booming is achievable more often than for Hughes and McArdle Bays.	Stage from Anacortes, Skyline Marina, or Port Angeles.	By boat from Anacortes, Port Angeles, or Skyline Marina. Vehicle access from the Lopez Island ferry terminal to the beach at the head of Aleck Bay via private roads.	Nesting seabirds, other marine bird species, sea urchins, archaeological sites.

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Strategy	Status	Location	Response Strategy	Length of Boom	Strategy Implementation	Staging Area	Site Access	Resources Protected
LOP-45	Field visit 4/99	Mackaye Harbor (Southwest corner of Lopez Island) SNJ0427	Exclusion/Collection - Keep oil out of the inner harbor, collect oil at the beach on the south shore.	3500'	Deploy boom from the point west of Barlow Bay on the south shore of the harbor at about 48°-26.325'N 122°-52.730'W (SNJ0664) to the point on the north shore just east of Jones Bay at about 48°-26.765'N 122°-53.205'W (SNJ0652). Oil can be collected with a vac truck from the beach of the small cove west of Barlow Bay. If conditions do not permit deployment as described, fall back into the bay and deploy 1500' of boom across the entrance of Barlow Bay.	Stage from Mackaye Harbor Road, or from Anacortes, Skyline Marina, or Port Angeles.	By boat from Anacortes, Port Angeles, or Skyline Marina. Vehicle access from the Lopez Island ferry terminal on Ferry Road to Center Road to Mud Bay Road to Mackaye Harbor Road.	Nesting seabirds, sand lance, surf smelt, sea urchins, archaeological sites.
LOP-46	Field visit 4/99	Davis Bay - Southeast Side (Southwest corner of Lopez Island) SNJ0628 48°-27.260'N 122°-55.060'W	Exclusion - Keep oil out of the southeast side of the bay.	1500'	Deploy boom in a chevron configuration from the rocky point due east of Buck Island to the second rocky point to the north.	Stage from Anacortes, Skyline Marina, or Port Angeles.	By boat from Anacortes, Port Angeles, or Skyline Marina.	Nesting seabirds, other species, sea urchins, archaeological sites.

4.3.1.2 Proposed Booming and Collection Strategies: Matrices - SAN JUAN ISLANDS

Strategy	Status	Location	Response Strategy	Length of Boom	Strategy Implementation	Staging Area	Site Access	Resources Protected
LOP-47	Field tested 11/99	Fishermen's Bay - Outside entrance to bay (West side of Lopez Island) SNJ0585	Deflection/ Exclusion - Keep oil out of Fishermen's Bay.	2200'	Deploy boom in two cascading sections to deflect oil away from the bay entrance. For the first section, deploy 1000' of boom from a point on the shore north of the county access at about 48°-31.525'N 122°-5.980'W (SNJ0585) to the channel navigational marker (do not attach the boom to the marker). Deploy 1200' of boom for the second section from the navigation marker to the shore on the peninsula about 1500-1700 feet west from the entrance channel at 48°-31.310'N 122°-55.445'W (SNJ0603). Overlap the boom sections by about 100', with the first section on the outside. Double anchors should be used at the ends at the marker and at the mid-point of each boom. A sand auger anchor should be used for the beach on the peninsula. Getting the correct angle on the booms and anchoring them well is critical to the success of this strategy. Flood tide currents run from north to south along shore.	Stage from the County access sites or from the Fisherman's Bay marina and boat ramp.	By boat from Fisherman's Bay ramp, or from Friday Harbor, Anacortes or Bellingham.	Seabirds, diving ducks, and archeological sites.

4.3.1.2 Proposed Booming and Collection Strategies: Matrices - SAN JUAN ISLANDS

Strategy	Status	Location	Response Strategy	Length of Boom	Strategy Implementation	Staging Area	Site Access	Resources Protected
LOP-48a	Field visit 11/99	Fishermen's Bay - East side of entrance channel (West side of Lopez Island) SNJ0586 48°-31.310'N 122°-55.000'W	Collection - Keep oil out of Fishermen's Bay.	100'	North - Deploy boom from the beach on the east side of the entrance channel near the county access (north of LOP-48b) to collect oil entering the bay on a flood tide. Current through the channel can be very strong.	Stage from the County access sites or from the Fisherman's Bay marina and boat ramp.	By boat from Fisherman's Bay ramp, or from Friday Harbor, Anacortes or Bellingham.	Seabirds, diving ducks, and archeological sites.
LOP-48b	Field visit 11/99	Fishermen's Bay - East side of entrance channel (West side of Lopez Island) SNJ0586 48°-31.290'N 122°-55.025'W	Collection - Keep oil out of Fishermen's Bay.	100'	South - Deploy boom from the beach on the east side of the entrance channel near the county access (south of LOP-48a) to collect oil entering the bay on a flood tide. Current through the channel can be very strong.	Stage from the County access sites or from the Fisherman's Bay marina and boat ramp.	By boat from Fisherman's Bay ramp, or from Friday Harbor, Anacortes or Bellingham.	Seabirds, diving ducks, and archeological sites.
LOP-49	Field tested 11/99	Fishermen's Bay - Small cove to the north on the west side of the entrance channel (West side of Lopez Island) SNJ0603 48°-31.220'N 122°-55.185'W	Exclusion - Keep oil out of the cove.	1000'	Necessary only if LOP-47 cannot be deployed or is unlikely to exclude oil from the bay due to strong flood tide currents, or winds from the north or west. Deploy boom across the mouth of the cove from north to south to keep oil out of the cove and to direct oil through the entrance channel for collection at LOP-51.	Stage from the County access sites or from the Fisherman's Bay marina and boat ramp.	By boat from Fisherman's Bay ramp, or from Friday Harbor, Anacortes or Bellingham.	Seabirds, diving ducks, and archeological sites.

4.3.1.2 Proposed Booming and Collection Strategies: Matrices - SAN JUAN ISLANDS

Strategy	Status	Location	Response Strategy	Length of Boom	Strategy Implementation	Staging Area	Site Access	Resources Protected
LOP-50	Field visit 11/99	Fishermen's Bay - Small cove to the south on the west side of the entrance channel (West side of Lopez Island) SNJ0602 48°-31.080'N 122°-55.140'W	Exclusion - Keep oil out of the cove.	1000'	Necessary only if LOP-47 cannot be deployed or is unlikely to exclude oil from the bay due to strong flood tide currents, or winds from the north or west. Deploy boom across the mouth of the cove from northwest to southeast to keep oil out of the cove and to direct oil through the entrance channel for collection at LOP-51.	Stage from the County access sites or from the Fisherman's Bay marina and boat ramp.	By boat from Fisherman's Bay ramp, or from Friday Harbor, Anacortes or Bellingham.	Seabirds, diving ducks, and archeological sites.
LOP-51	Field visit 11/99	Fishermen's Bay - Collection inside bay (West side of Lopez Island) SNJ0588 48°-30.900'N 122°-54.770'W	Diversion/ Collection - Divert oil to a collection site on shore.	1000'	Necessary only if LOP-47 cannot be deployed or is unlikely to exclude oil from the bay due to strong flood tide currents, or winds from the north or west. Deploy boom from the boat ramp north of the Fisherman's Harbor Marina to the northwest to collect oil moving through the entrance channel. Deployment may be difficult if tidal currents are strong	Stage from the County access sites or from the Fisherman's Bay marina and boat ramp.	By boat from Fisherman's Bay ramp, or from Friday Harbor, Anacortes or Bellingham.	Seabirds, diving ducks, and archeological sites.
LOP-52	Field visit 11/99	Fishermen's Bay - Lagoon at the south end of the bay (West side of Lopez Island) SNJ0598 48°-30.460'N 122°-55.870'W	Exclusion - Keep oil out of the lagoon.	1000'	Deploy boom across the entrance to the lagoon. Access may be difficult, much of the entrance is a mudflat at low tide.	Stage from the County access sites or from the Fisherman's Bay marina and boat ramp.	By boat from Fisherman's Bay ramp, or from Friday Harbor, Anacortes or Bellingham.	Seabirds, diving ducks, and archeological sites.

4.3.1.2 Proposed Booming and Collection Strategies: Matrices - SAN JUAN ISLANDS

Strategy	Status	Location	Response Strategy	Length of Boom	Strategy Implementation	Staging Area	Site Access	Resources Protected
JAM-53	Field visit 8/01	James Island - West Side Cove (East of Decatur Island) SNJ0707 48°-30.700'N 122°-46.695'W	Exclusion - Keep oil out of the cove.	1400'	Deploy boom across the narrowest part of the entrance to the cove on the west side of the island, from the point at the south end, directly north to the point at the north end. Attach boom to the shore or trees, and anchor to maintain position.	Stage from Anacortes or Skyline Marina.	By boat from Anacortes or Skyline Marina. No vehicle access.	State Park public recreational area.
JAM-54	Field visit 8/01	James Island - East Side Cove (East of Decatur Island) SNJ0703 48°-30.795'N 122°-46.405'W	Exclusion - Keep oil out of the cove.	1000'	Deploy boom across the narrowest part of the entrance to the cove on the east side of the island, from the point at the south end, northwest to the shore at the north end. Attach boom to the shore or trees, and anchor to maintain position.	Stage from Anacortes or Skyline Marina.	By boat from Anacortes or Skyline Marina. No vehicle access.	State Park public recreational area.